

CLAIMS

1. A method of modifying one or more characteristics of a plant comprising introducing into the plant a combination of sequences, each sequence comprising a gene encoding an enzyme having starch synthase activity, or a sequence functionally equivalent thereto, or an effective part thereof, each sequence being operably linked to a promoter so as to affect the expression of corresponding endogenous genes in the plant.
2. A method according to claim 1, wherein the combination of sequences is introduced into the plant substantially simultaneously.
3. A method according to claim 2, wherein the combination of sequences is introduced into the plant on a single nucleic acid construct.
4. A method according to claim 1, wherein a first sequence comprising a gene encoding an enzyme having starch synthase activity or a sequence functionally equivalent thereto, is introduced into a plurality of plants and one or more of the plurality of plants are selected for introduction of a second sequence comprising a second gene encoding an enzyme having starch synthase activity or a sequence functionally equivalent thereto.
5. A method according to any one of the preceding claims, effective in modifying one or more properties of starch produced by the plant.
6. A method according to any one of the preceding claims, wherein the introduced sequences are operably linked, directly or indirectly, in an antisense orientation to a promoter.
7. A method according to any one of the preceding claims, wherein the introduced sequences comprise a gene encoding potato starch synthase II (SSII)

enzyme and a gene encoding potato starch synthase III (SSIII) enzyme or sequences functionally equivalent thereto.

8. A plant modified by the method of any one of the preceding claims, or the progeny of or part of such a plant.

9. A plant according to claim 8, wherein the plant is selected from potato, cassava, maize, wheat, barley, tomato, rice and pea.

10. Use of a plant or part thereof according to claim 8 or 9, in the preparation of a food product.

11. Starch obtained or obtainable from a plant according to claim 8 or 9.

12. Starch according to claim 11, which has a viscosity onset temperature, as judged by viscoamylograph of a 10% w/w aqueous suspension at atmospheric pressure using a Newport Scientific Rapid Visco Analyser, reduced by at least 10°C compared to starch extracted from equivalent, unmodified plants.

13. Starch according to claim 12, wherein the viscosity onset temperature is reduced by at least 12°C.

14. Starch according to any one of claims 11 to 13, which has an endotherm onset temperature, as determined by differential scanning calorimetry using a Perkin Elmer DSC 7 instrument, which is reduced by at least 15°C compared to starch extracted from equivalent, unmodified plants.

15. Starch according to any one of claims 11 to 14, which has an endotherm onset temperature, as determined by differential scanning calorimetry using a Perkin Elmer DSC 7 instrument, which is reduced by at least 17°C compared to starch extracted from equivalent, unmodified plants.

16. Starch according to any one of claims 11-15, having an increased amount of starch modules with a degree of polymerisation of 6-12, as judged by analysis of debranched starch by high performance anion exchange chromatography (HPAEC) using a Dionex Carbopac PA-100 column, compared to starch extracted from equivalent, unmodified plants.

17. Starch according to any one of claims 11-16, having a decreased amount of starch molecules with a degree of polymerisation of 15-24, as judged by analysis of debranched starch by HPAEC using a Dionex Carbopac PA-100 column, compared to starch extracted from equivalent, unmodified plants.

18. Starch according to any one of claims 11-17, having a chain length distribution substantially as shown by traces 0445 or 0422 in Figure 11, as judged by analysis of debranched starch by HPAEC using a Dionex Carbopac PA-100 column.

19. Starch extracted from a potato plant having a viscosity onset temperature, as judged by viscoamylograph of 10% w/w aqueous suspension at atmospheric pressure using a Newport Scientific Rapid Visco Analyser, of less than 55°C.

20. Starch extracted from a potato plant having an endotherm onset temperature, as judged by differential scanning calorimetry using a Perkin Elmer DSC 7 instrument, of less than 50°C.

21. Starch according to claim 20, having an endotherm onset temperature of less than 50°C.

22. Starch according to claim 21, having an endotherm onset temperature of less than 44°C.

23. Starch according to any one of claims 19-22 and further in accordance with any one of claims 11-18.

24. Use of starch according to any one of claims 11 to 23, in the preparation or processing of a foodstuff, paper, textile or adhesive.

25. A method of producing starch comprising modifying a plant according to the method of any one of claims 1 to 7 and extracting starch from the plant.

26. A nucleic acid construct comprising a combination of sequences, each sequence comprising a gene encoding an enzyme having starch synthase activity, or a functionally equivalent sequence thereof or an effective part thereof, each sequence being operably linked to a promoter.

27. A nucleic acid construct according to claim 26, suitable for performing a method in accordance with any one of claims 1-7.

28. A plant comprising a construct according to claim 26 or 27, or the progeny of or part of such a plant.

29. A plant comprising starch which, when extracted from the plant, is in accordance with any one of claims 12-23.